

WHAT IS CLAIMED IS:

1 1. An isolated CLASP-3 polynucleotide, wherein said polynucleotide
2 is

3 (a) a polynucleotide that has the sequence of SEQ ID NO:1 or

4 (b) a polynucleotide that hybridizes under stringent hybridization
5 conditions to (a) and encodes a polypeptide having the sequence of SEQ ID NO:2 or an
6 allelic variant or homologue of a polypeptide having the sequence of SEQ ID NO:2; or

7 (c) a polynucleotide that hybridizes under stringent hybridization
8 conditions to (a) and encodes a polypeptide with at 25 contiguous residues of the
9 polypeptide of SEQ ID NO:2; or

10 (d) a polynucleotide that hybridizes under stringent hybridization
11 conditions to (a) and has at least 12 contiguous bases identical to or exactly
12 complementary to SEQ ID NO:1.

1 2. The polynucleotide of claim 1 that encodes a polypeptide having
2 the full-length sequence of SEQ ID NO:2.

1 3. The isolated polynucleotide of claim 1, comprising the cDNA
2 coding sequence of ATCC accession numbers PTA-1564, PTA-1570, PTA-2616 or PTA-
3 2617.

1 4. An isolated CLASP-3 polynucleotide comprising a nucleotide
2 sequence that has at least 90% percent identity to SEQ ID NO:1.

1 5. An isolated polypeptide comprising a nucleotide sequence that has
2 at least 90% sequence identity to SEQ ID NO:2 and is immunologically crossreactive
3 with SEQ ID NO:2 or shares a biological function with native CLASP-3.

1 6. A vector comprising the polynucleotide of claim 1.

1 7. An expression vector comprising the polynucleotide of claim 1 in
2 which the nucleotide sequence of the polynucleotide is operatively linked with a
3 regulatory sequence that controls expression of the polynucleotide in a host cell.

1 8. A host cell comprising the polynucleotide of claim 1, or progeny of
2 the cell.

1 9. A host cell comprising the polynucleotide of claim 1, wherein the
2 nucleotide sequence of the polynucleotide is operatively linked with a regulatory
3 sequence that controls expression of the polynucleotide in a host cell, or progeny of the
4 cell.

1 10. The host cell of claim 8 which is a eukaryote.

1 11. The polynucleotide of claim 1 that is an antisense polynucleotide
2 less than about 200 bases in length.

1 12. An antisense oligonucleotide complementary to a messenger RNA
2 comprising SEQ ID NO:1 and encoding CLASP-3, wherein the oligonucleotide inhibits
3 the expression of CLASP-3.

1 13. An isolated DNA that encodes a CLASP-3 protein as shown in
2 SEQ ID NO:2.

1 14. The polynucleotide of claim 1 that is RNA.

1 15. A method for producing a polypeptide comprising:
2 (a) culturing the host cell of claim 8 under conditions such that the
3 polypeptide is expressed; and
4 (b) recovering the polypeptide from the cultured host cell or its cultured
5 medium.

1 16. An isolated polypeptide encoded by a polynucleotide of claim 1.

1 17. The polypeptide of claim 16 that has the amino acid sequence of
2 SEQ ID NO:2 or a fragment thereof.

1 18. The isolated polypeptide of claim 16, wherein the polypeptide is
2 cell-membrane associated.

1 19. The isolated polypeptide of claim 16, wherein the polypeptide is
2 soluble.

1 20. The polypeptide of claim 17, wherein the polypeptide is fused with
2 a heterologous polypeptide.

- 1 21. An isolated CLASP-3 protein having the sequence as shown in
2 SEQ ID NO:2.
- 1 22. A protein comprising the sequence as shown in SEQ ID NO:1 and
2 variants thereof that are at least 95% identical to SEQ ID NO:2 and specifically binds
3 spectrin.
- 1 23. An isolated antibody that specifically binds to a polypeptide having
2 the amino acid sequence as shown in SEQ ID NO:2, or a binding fragment thereof.
- 1 24. The antibody of claim 23, that is monoclonal.
- 1 25. A hybridoma capable of secreting the antibody of claim 24.
- 1 26. A method for identifying a compound or agent that binds a
2 CLASP-3 polypeptide comprising:
3 i) contacting a CLASP-3 polypeptide of claim 17 with the compound or
4 agent under conditions which allow binding of the compound to the CLASP-3
5 polypeptide to form a complex and
6 ii) detecting the presence of the complex.
- 1 27. A method of detecting a CLASP-3 polypeptide in a sample,
2 comprising:
3 (a) contacting the sample with an antibody or binding fragment of claim 24
4 and (b) determining whether a complex has been formed between the antibody and with
5 CLASP-3 polypeptide.
- 1 28. A method of detecting a CLASP-3 polypeptide in a sample,
2 comprising:
3 (a) contacting the sample with a polynucleotide of claim 1 or a
4 polynucleotide that comprises a sequence of at least 12 nucleotides and is complementary
5 to a contiguous sequence of the polynucleotide of section (a) of claim 1, and (b)
6 determining whether a hybridization complex has been formed.
- 1 29. A method of detecting a CLASP-3 nucleotide in a sample,
2 comprising:

3 (a) using a polynucleotide that comprises a sequence of at least 12
4 nucleotides and is complementary to a contiguous sequence of the polynucleotide of
5 section (a) of claim 1, in an amplification process; and
6 (b) determining whether a specific amplification product has been formed.

1 30. A pharmaceutical composition comprising a polynucleotide of
2 claim 1, a polypeptide of claim 16, or an antibody of claim 23 and a pharmaceutically
3 acceptable carrier.

1 31. A method of inhibiting an immune response in a cell comprising:
2 (a) interfering with the expression of a CLASP-3 gene in the cell;
3 (b) interfering with the ability of a CLASP-3 protein to bind to another
4 cell;
5 (c) interfering with the ability of a CLASP-3 protein to bind to another
6 protein.

1 32. The method of claim 31, wherein the cell is a T cell or a B cell.

1 33. The method of claim 31 comprising contacting the cell with an
2 effective amount of a polypeptide which comprises the amino acid sequence of SEQ ID
3 NO:2 or a fragment thereof.

1 34. A method of inhibiting an immune response in a subject,
2 comprising administering to the subject a therapeutically effective amount of an antibody
3 which specifically binds a polypeptide having the sequence of SEQ ID NO:2.

1 35. A method of preventing or treating a CLASP-3-mediated disease
2 comprising administering to a subject in need thereof a therapeutically effective amount
3 of a pharmaceutical composition of claim 30.

1 36. The method claim 35, wherein the CLASP-3-mediated disease is
2 an autoimmune disease.

1 37. A method of treating an autoimmune disease in a subject caused or
2 exacerbated by increased activity of T_H1 cells consisting of administering a
3 therapeutically effective amount of a pharmaceutical composition of claim 30 to the
4 subject.